

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of : Customer Number: 53080
Yoshiyuki MURAOKA, et al. : Confirmation Number: 5740
Application No.: 10/586,602 : Group Art Unit: 1795
Filed: July 20, 2006 : Examiner: Adam A. ARCIERO
For: NONAQUEOUS ELECTROLYTE SECONDARY BATTERY

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed January 28, 2010, wherein Appellant appeals from the Primary Examiner's rejection of claims 3 and 4.

Real Party In Interest

This application is assigned to Panasonic Corporation (formerly Matsushita Electric Industrial Co., Ltd.) by assignment recorded on July 28, 2008, at Reel 021300, Frame 0561.

Related Appeals and Interferences

To the best of Appellant's and Appellant's representatives' knowledge, there are no related appeals or interferences (see, Related Proceedings Appendix).

Status of Claims

1. Claims canceled: 1-2 and 5-8
2. Claims withdrawn from consideration, but not canceled: None
3. Claims pending: 3-4
4. Claims allowed: None
5. Claims rejected: 3-4
6. Claims on appeal: 3-4

Status of Amendments

Amendments to the claims were filed on January 4, 2010 in response to the November 4, 2009 final Office Action. As indicated in the Advisory Action of January 20, 2010, these amendment were entered upon filing of this Appeal.

Summary of Claimed Subject Matter

Independent claim 3 recites a nonaqueous electrolyte secondary battery (page 3, lines 24-25 of the original specification) comprising a positive electrode having an active material of a complex oxide capable of storing and emitting lithium ions (page 3, line 27-page 4, line 2; page 7, lines 2-10; and FIG. 1. 2), a negative electrode capable of storing and emitting lithium ions (page 6, lines 5-19 and FIG. 1. 1), a separator disposed between the positive electrode and the negative electrode (page 5, lines 25-27 and FIG. 1. 3), and an electrolytic solution containing a nonaqueous solvent (page 6, lines 1-2). Claim 3 further recites that discharge-end voltage of the nonaqueous electrolyte secondary battery is within 2.5V to 3.0V (page 19, lines 5-7).

Claim 3 also recites that the positive electrode contains a positive electrode active material comprising a first active material of lithium-based complex oxide and a second active material of another lithium-based complex oxide having an average discharge voltage lower than an average discharge voltage of the first active material and an added amount of the second active material is at least 5% and at most 20% in capacity of a total amount of capacity of the positive electrode active material (page 10, line 22-page 11, line 13).

Further, claim 3 recites that the first active material is a composite “A” expressed as Li_xMO_2 , “M” denoting a 3d transition metal, x being given as $0.9 \leq x \leq 0.98$ (page 10, lines 16-18 and 22-23), and the second active material is LiMnO_2 of which average discharge voltage is within 2V to 3V (page 10, lines 18-20).

Claim 4 is dependent on claim 3, and recites that the composite “A” contains at least one of materials expressed as $\text{Li}_x\text{Ni}_y\text{Mn}_z\text{Co}_{1-y-z}\text{O}_2$, x, y, and z being given as $0.9 \leq x \leq 0.98$, $0.3 \leq y \leq 0.4$, and $0.3 \leq z \leq 0.4$, and $\text{Li}_x\text{Ni}_y\text{Co}_z\text{Al}_{1-y-z}\text{O}_2$, x, y, and z being given as $0.9 \leq x \leq 0.98$, $0.55 \leq y \leq 0.8$, and $0.15 \leq z \leq 0.3$ (page 11, lines 17-20).

Ground of Rejection To Be Reviewed By Appeal

1) Claims 3-4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Oishi et al (USP 4,943,497) in view of Yamashita et al. (USP 6,387,564) and in view of Hosoya et al. (US 2004/0076882).

Argument

Claims 3-4 are patentable over Oihi, Yamashita and Hosoya since the claimed range of Li amount of $0.9 \leq x \leq 0.98$ in Li_xMO_2 is critical and exhibits unexpected results.

Independent Claim 3

Appellant respectfully submits that since the claimed range of Li amount of $0.9 \leq x \leq 0.98$ in the first active material of the positive electrode exhibits the unexpected results, claim 3 is not obvious over the combination of Oishi, Yamashita and Hosoya. It is well established that [Appellant] can rebut a presumption of obviousness based on a claimed invention that falls within a prior art range by showing that there are new and unexpected results relative to the prior art. *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322, 73 USPQ2d 1225, 1228 (Fed. Cir. 2004). In claim 3, the amount of Li in Li_xMO_2 is limited within the range of $0.9 \leq x \leq 0.98$. In contrast, the Office Action asserts that Oishi disclose $\text{Li}_x\text{Ni}_{1-y}\text{O}_2$ or $\text{Li}_x\text{Co}_y\text{Ni}_{1-y}\text{O}_2$ where $0 < x \leq 1.1$. In other words, the claimed Li amount appears to fall in the prior art range. Accordingly, Appellant respectfully traverses the present rejection by showing the unexpected results as set forth below.

Appellant submits that Table 1 of the specification exhibits criticality of the claimed Li amount in Li_xMO_2 . As shown in Table 1 of the present specification, a designed capacity of the battery (i.e., 100W Discharge Capacity) decreases substantially if the x value (Li amount) is less than 0.9, and if the x value is more than 0.98, the capacity retention ratio drastically decreases. For example, while Examples 3, 5 and 6, in which the Li amount fall in $0.9 \leq x \leq 0.98$, exhibit higher discharge capacity of 95%, Example 4, in which the Li amount $x=0.85$, shows a lower discharge capacity of only 75%. Further, while Examples 3, 5, and 6 exhibit higher capacity retention ratio of 70%, Comparison Example 3, in which the Li amount $x=1$, shows only 10% of capacity retention ratio. These results clearly indicate that the Li amount of $0.9 \leq x \leq 0.98$ in Li_xMO_2 is critical to the electrical properties of

the battery utilizing Li_xMO_2 as the active material of the positive electrode, which exhibits new and unexpected results as shown in Table 1 of the specification.

The Advisory Action dated January 20, 2010 ignores the above mentioned unexpected results. The Advisory Action states that “Example 4 shows a compound in which the amount of Lithium equals 0.85 which falls outside the claimed, significant range. The results for the compound of Example 4 such as the highest temperature capacity retention ratio and voltage at flection point in discharge are very similar to the compounds which meet the limitations of claim 1,” and concludes that “[t]he burden is on Applicant to establish results that are unexpected and significant.” However, as set forth above, this statement ignores the unexpected lower discharge capacity of only 75% of Example 4.

Appellant submit that, the M.P.E.P. does not require that both ends of the claimed range exhibit criticality with respect to the same property or characteristic. Appellant submits that the entire range of the claimed Li amount is critical with respect to the capacity retention ratio at upper end of the range and the discharge capacity at lower end of the range. As such, it is respectfully submitted that Appellant has established that the claimed range of Li amount in Li_xMO_2 is critical and exhibits the unexpected results as shown in Table 1 of the specification.

Based on the foregoing, it is clear that claim 3 would not have been obvious over the combination of Oishi, Yamashita and Hosoya. Accordingly, Appellant requests that the rejection of claim 3 be withdrawn.

Dependent Claim 4

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100,

1108 (Fed. Cir. 1987). Accordingly, as claim 3 is patentable for the reasons set forth above, Appellant respectfully submits that claim 4 is also in condition for allowance.

Conclusion

For all of the foregoing reason, Appellant respectfully submits that the ground of rejection of the claims on appeal is in error and should be reversed.

Respectfully submitted,

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CLAIMS APPENDIX

3. A nonaqueous electrolyte secondary battery comprising:
a positive electrode having an active material of a complex oxide capable of storing and emitting lithium ions;
a negative electrode capable of storing and emitting lithium ions;
a separator disposed between the positive electrode and the negative electrode; and
an electrolytic solution containing a nonaqueous solvent,
wherein discharge-end voltage of the nonaqueous electrolyte secondary battery is within 2.5V to 3.0V,
the positive electrode contains a positive electrode active material comprising a first active material of lithium-based complex oxide and a second active material of another lithium-based complex oxide having an average discharge voltage lower than an average discharge voltage of the first active material,
an added amount of the second active material is at least 5% and at most 20% in capacity of a total amount of capacity of the positive electrode active material, and
the first active material is a composite "A" expressed as Li_xMO_2 , "M" denoting a 3d transition metal, x being given as $0.9 \leq x \leq 0.98$, and the second active material is LiMnO_2 of which average discharge voltage is within 2V to 3V.

4. The nonaqueous electrolyte secondary battery according to claim 3, wherein the composite "A" contains at least one of materials expressed as $\text{Li}_x\text{Ni}_y\text{Mn}_z\text{Co}_{1-y-z}\text{O}_2$, x, y, and z being given as $0.9 \leq x \leq 0.98$, $0.3 \leq y \leq 0.4$, and $0.3 \leq z \leq 0.4$, and $\text{Li}_x\text{Ni}_y\text{Co}_z\text{Al}_{1-y-z}\text{O}_2$, x, y, and z being given as $0.9 \leq x \leq 0.98$, $0.55 \leq y \leq 0.8$, and $0.15 \leq z \leq 0.3$.

EVIDENCE APPENDIX

No evidence was provided during prosecution of this application.

RELATED PROCEEDINGS APPENDIX

To the best of Appellant's and Appellant's representatives' knowledge, there are no related appeals or interferences.